

Application S/N: 10/724,341  
Atty Docket No. 1014-27

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Date: January 3, 2007

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REMARKS

The Examiner rejected claims 1-2 and 5-6 under 35 U.S.C. 103(a) as being allegedly unpatentable over Everitt (U.S. Patent No.: 6,963,321) in view of Fan et. al. (U.S. Patent No.: 6,141,367). The Examiner also rejected claims 3-4 and 7-8 as being allegedly unpatentable over Sito (U.S. Patent No.: 6,404,145) in view of Fan et. al. (U.S. Patent No.: 6,141,367). These rejections are respectfully traversed in view of the following remarks.

The 35 U.S.C. 103(a) Rejection of Claims 1-2 and 5-6 over Everitt (U.S. Patent No.: 6,963,321) in view of Fan et. al. (U.S. Patent No.: 6,141,367).

The Examiner rejected claims 1-2 and 5-6 under 35 U.S.C. 103(a) as being allegedly unpatentable over Everitt (U.S. Patent No.: 6,963,321, hereinafter "Everitt"), in view of Fan et. al. (U.S. Patent No.: 6,141,367, hereinafter "Fan"). The Examiner stated that Everitt allegedly discloses a passive matrix display device (Everitt: col. 20-26) for displaying a video image produced by a signal source connected thereto, comprising a plurality of LED/OLED display elements connected to the signal source and configured for displaying the video image received from the signal source, wherein each the display element displays a predetermined portion of the video image. While admitting that Everitt does not disclose the display elements being chiral laser elements, the Examiner proposed that Fan discloses a light emitting element being a chiral laser light emitting element (Fan, col. 4, lines 1-3; col. 10, lines 46-49).

The Examiner therefore alleged that it would have been obvious to one ordinary skill in the art to substitute Fan's chiral laser light emitting elements for Everitt's LED/OLED elements because chiral laser light emitting elements have better performance, such as higher speed, than the LED/OLED elements. The Applicants respectfully traverse the Examiner's arguments for the following reasons.

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To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

The essence of Applicants' invention is the use of plural chiral lasers in an active or passive matrix configuration to either serve as display elements directly in certain embodiments, and the use of one or more chiral lasers to serve as powerful low-power uniform backlight for a screen (such as an LCD).

Everitt states that the very essence of its invention is directed to various embodiments of a method of providing a voltage to one or more diodes (which make up the Everitt display elements) (Everitt, col 3, lines 60-67 to col 4, lines 1-27). Accordingly, the "display elements" (LED/OLED) of Everitt are clearly electronically driven.

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In stark contrast, Fan is unmistakably directed to an optically pumped CLC film laser device, which *inter alia* requires its own individual optical pump device (such as an individual laser or flash-lamp) that emits light of a higher frequency than the CLC film (referred to in Fan as the "dye laser") emission frequency (Fan, Col 4, lines 1-33). In addition, Fan recommends the use of optics to assist the optical pump beam to exceed its intensity above the dye laser lasing threshold, stating however, that with a sufficiently powerful/intense optical pump source capable of producing a focused beam, optics may not be necessary (Fan, col 4, line 6, and lines 53-67). The dye laser taught by Fan cannot be pumped electronically (i.e., by providing a voltage thereto), because by its very nature it relies on optical excitability of its gain medium, which produces lasing when exposed to light above a certain frequency and intensity (i.e., above a lasing threshold) (Fan, col 5, lines 7-14).

Therefore, contrary to Examiner's suggestion, a combination formed by replacing Everitt's matrix of electronically driven display elements with plural individual Fan's chiral dye lasers is plainly impossible, because each of the two inventions operates on completely different scientific principles and technical infrastructure (electrical pumping/driving vs. optical pumping). Thus, replacing Everitt's electrically driven display elements with optically pumped devices of Fan, which would not respond to the delivered voltage in any way, would not produce a working display. As a result, there could be absolutely no motivation teaching or suggestion in either Everitt, Fan or any other source or reference, that would lead one skilled in the art to even contemplate combining the incompatible technologies of Everitt and Fan.

More importantly, an essential component of Fan's dye laser is a motion means/actuator 9 (Fan, col 4, line 7; and in more detail in col 5, lines 39 to 67) for moving the dye laser film 5 relative to the optical pump output beam in either a continuous or discrete motion. Fan specifically states that the dye laser film of its dye laser becomes distorted from heat generated by pumping (Fan, col

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5, lines 45-49), and that it is necessary to move it, in accordance with various motion schemes, with respect to the optical pump beam, to achieve the expected performance. This essential feature of Fan is in stark contrast to the requirement of stability of position and orientation of any display element, used in a display device, and in fact teaches away from utilizing the dye laser of Fan for any display-related purposes.

Thus, because each of Fan's dye lasers requires its own high intensity optical pump (another laser or special flash-lamp), as well as its own servo motion system, and because Fan specifically contemplates movement of the dye laser light emitting film during use (which is contrary to the requirement of positional stability of any display element), using Fan's dye lasers for any form of matrix or array display is completely impractical. Accordingly, it would not be obvious to combine Fan with any other reference (Everett or otherwise) which teaches use of a matrix or array of display elements. Applicants thus respectfully request that the 35 USC 103(a) rejection of claims 1-2 and 5-6 be withdrawn.

The 35 U.S.C. 103(a) Rejection of Claims 3-4 and 7-8 over Sito (U.S. Patent No.: 6,404,145) in view of Fan et. al. (U.S. Patent No.: 6,141,367).

The Examiner also rejected claims 3-4 and 7-8 under 35 U.S.C. 103(a) as being allegedly unpatentable over Sito (U.S. Patent No.: 6,404,145, hereinafter "Sito") in view of Fan et. al. (U.S. Patent No.: 6,141,367, hereinafter "Fan"). The Examiner stated that Sito allegedly discloses a LCD display device for displaying a video image produced by a signal source connected thereto, comprising: a flat LCD display panel connected to the signal source and configured operable to display the video image received therefrom (Fig. 1) and light source element (col. 4, lines 5-8) positioned behind the flat display panel operable to provide a wide area coherent backlight for the flat LCD display panel. While admitting that Sito does not disclose the light source element being a

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chiral laser element, the Examiner proposed that Fan discloses a chiral laser light emitting element (Fan: col. 4, lines 1-3; col. 10, lines 46-49). The Examiner therefore alleged that it would have been obvious to one ordinary skill in the art to substitute Fan's chiral laser light emitting elements for Sito's light source, because Sito allegedly discloses that "any other light source can be used to as the light source element" (col. 4, lines 5-8). The Applicants respectfully traverse the Examiner's arguments for the following reasons.

The various well-established criteria for determining obviousness under 35 103(a) have been addressed in great detail above in connection with the discussion of the proposed combination of Everitt and Fan, and need not be repeated here. Applicants respectfully suggest that for reasons very similar to those discussed above in connection with Everitt and Fan, a combination of Fan and Sito suggested by the Examiner would teach away from Sito, and would not produce a useful result. Thus, contrary to Examiner's suggestion, such a combination would certainly not be obvious.

Sito is specifically directed to a "backlight control apparatus for use with an LCD display device to save power consumed by the display" (Sito, col 1, lines 27-29, and throughout the reference). In virtually every portion of its summary and detailed description, Sito clearly and repeatedly states that the essence of its invention is controlling the operation of the backlight lamp 5 via a backlight controller 10 by selectively applying or cutting off voltage to the backlight lamp 5 power source circuit 8 (Sito, col 5, lines 14-21), and/or by selectively suppressing the voltage delivered to the backlight lamp during a power saving mode (Sito, col 5, lines 23-37). An additional feature of Sito - a voltage control knob 11 enables control over voltage delivery/suppression to the backlight lamp 5 during synchronization and video periods of the display (Sito, col 5, lines 45-58).

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Clearly, while Sito does say that light sources other than fluorescent lamps or LEDs may be used as the backlight lamp 5, the above-described key voltage control-based features of Sito's core inventive backlight control system, specifically require use of a backlight lamp 5 which is responsive to changes in voltage supplied thereto. Because the Fan dye laser is optically pumped, it would not be responsive to changes in voltage applied thereto and thus could not be used as a backlight lamp 5 in Sito. Just as importantly, as noted above, the Fan dye laser requires motion servo-mechanisms to move the dye laser film with respect to the pump source beam in discrete or continuous manner to maintain the performance of the dye laser during use. This essential feature of Fan is in stark contrast to the requirement of uniformity, and stability of position and orientation of any backlight element used in a display, and in fact teaches away from utilizing the dye laser of Fan for any backlight-related purposes.

Moreover, while the Examiner suggests that the Fan dye laser may be used as a "wide area coherent backlight" for the flat LCD display panel noted in Sito, in stark contrast, Fan is actually directed to a dye laser that produces tightly focused coherent laser beams, preferably coupled into an optical fiber or a lightpipe (Fan, col 4, lines 64-67 and col 5, lines 1-3). There is no teaching or suggestion anywhere in Fan that its dye laser may be configured to produce a wide area coherent output, which feature is clearly recited in Applicants' independent claims 3 and 7. For this and the above-described reasons, utilizing Fan's dye laser for any form of display backlight is completely impractical, especially because the Fan dye laser provides a thin focused coherent beam output which is of little use as a display backlight. Accordingly, it would not be obvious to combine Fan with any other reference (Sito or otherwise) which teaches use of backlights in LCD or similar displays. Applicants thus respectfully request that the 35 USC 103(a) rejection of claims 3-4 and 7-8 be withdrawn.

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CONCLUSION

Applicants believe that in light of the foregoing remarks, claims 1-8 are in condition for allowance. Applicants thus respectfully request that the Examiner withdraw the various 35 USC 103(a) rejections of claims 1-8 and ask that the Examiner pass the application to early issue. If there are any questions, the Examiner is urged to contact Applicants' attorney at the below-noted telephone number.

Respectfully submitted,



By \_\_\_\_\_

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